

METHOD AND APPARATUS FOR WARMING AND STORAGE OF COLD FLUIDS

Abstract

Stranded natural gas is sometimes liquefied and sent to other countries that can use the gas in a transport ship. Conventional receiving terminals use large cryogenic storage tanks to hold the liquefied natural gas (LNG) after it has been offloaded from the ship. The present invention eliminates the need for the conventional cryogenic storage tanks and instead uses uncompensated salt caverns to store the product. The present invention can use a special heat exchanger, referred to as a Bishop Process heat exchanger, to warm the LNG prior to storage in the salt caverns or the invention can use conventional vaporizing systems some of which may be reinforced and strengthened to accommodate higher operating pressures. In one embodiment, the LNG is pumped to higher pressures and converted to dense phase natural gas prior to being transferred into the heat exchanger and the uncompensated salt caverns.